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Undergraduate Research Conference at Missouri S&T

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## Gender and Ethnicity Bias in Wildland Fire Journals

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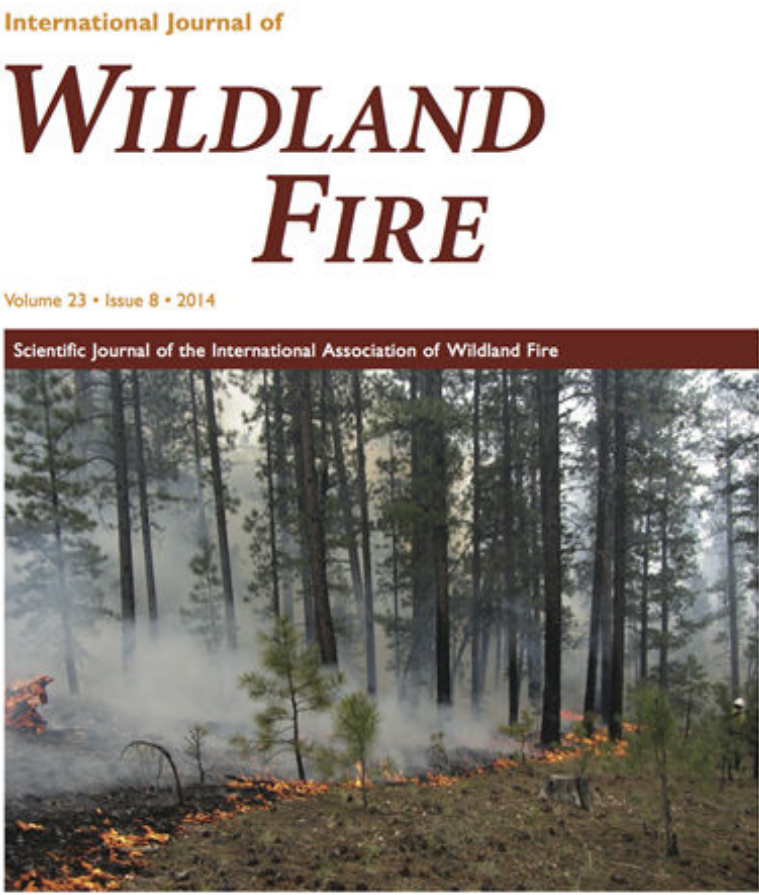
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Introduction

- The purpose of this study is to examine gender equity in review times in scientific journals.
  - Women make up 50% of the STEM workforce in the US, make an average of 82% what males do in STEM fields, and only get 34% of first job offers<sup>2,3</sup>.
  - Some journals have made strides, albeit slow toward equitable publishing practices. *NATURE* is one such journal and has created the Nature Portfolio Diversity Commitment to ensure gender diversity in all aspects of their publications<sup>4</sup>.
- (2) doi: 10.1128/MMBR.00018-19  
(3) doi: 10.1038/495022a  
(4) <https://www.nature.com/nature-portfolio/about/diversity-commitment>

Materials & Methods

- All articles from *The International Journal of Wildland Fire* were examined from 2010-2019
- The first author, assumed gender, last author, assumed gender, paper year, URL, number of citations, and submitted and accepted dates were recorded.
- The number of days spent in review was calculated based on the submitted and accepted dates in Excel.
- Gender and ethnicity were assigned based on published databases, census summaries and expert assignments. Initials without a first name served as a control (unknown).
- Data were analyzed using an ANOVA comparing days to acceptance and gender or ethnicity.



Results

- Gender and ethnicity of first author and last author had effects on time to paper acceptance; however, ethnicity had the most powerful effect on acceptance time. Asian ethnicity resulted in significant delays in paper acceptance.

Conclusions & Future Directions

- Double-blind review is an imperative for equitable STEM access for all scientists: Journal reviewers are discriminating against people based on ethnicity and gender, whether consciously or not, and this system needs repaired.
- This is a partial data set in an ongoing collaboration that is examining multiple journals at multiple scales. We plan to continue this work and expand these data to include a broader set of journals, data, and refined categories of ethnicities.

Acknowledgements

This work is being significantly aided by collaborators at Saint Mary’s College in Notre Dame Indiana and has been assisted by students in the Verble Lab over the past academic year. Financial assistance was provided by the Missouri S&T OURE Program.

The length of time it takes to get your journal paper accepted depends on your gender and ethnicity.

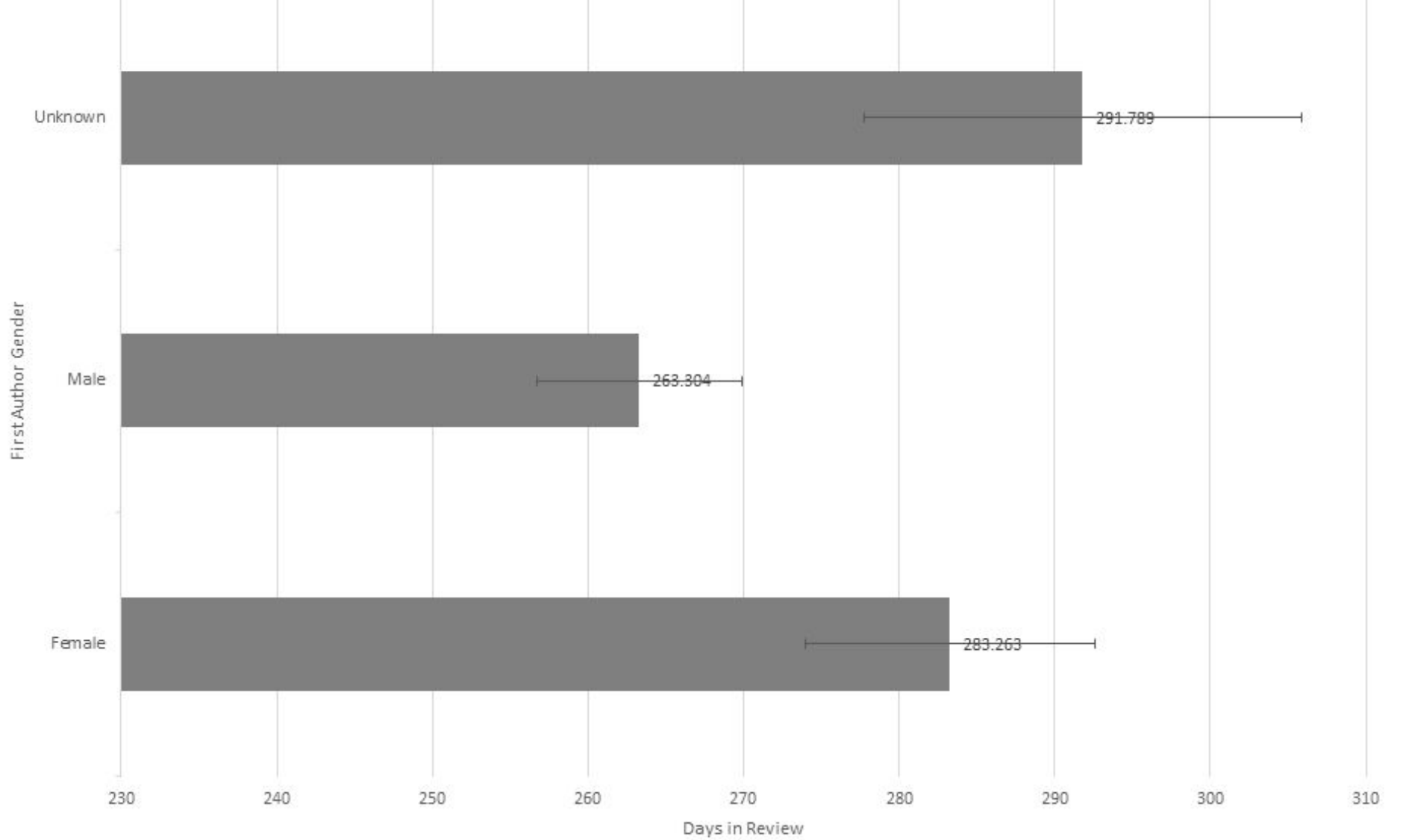


Figure 1: First Author Gender by Days in Review: 893 easily assumed genders with 259 females, 520 males and 114 of unknown gender (submitted initials). Females take on average 283.263 days in review (9.318 SD), males 263.304 days in review (6.576 SD), unknown genders take on average 291.789 days in review (14.045 SD). The F Ratio was 2.5869 and the P value was 0.0758.

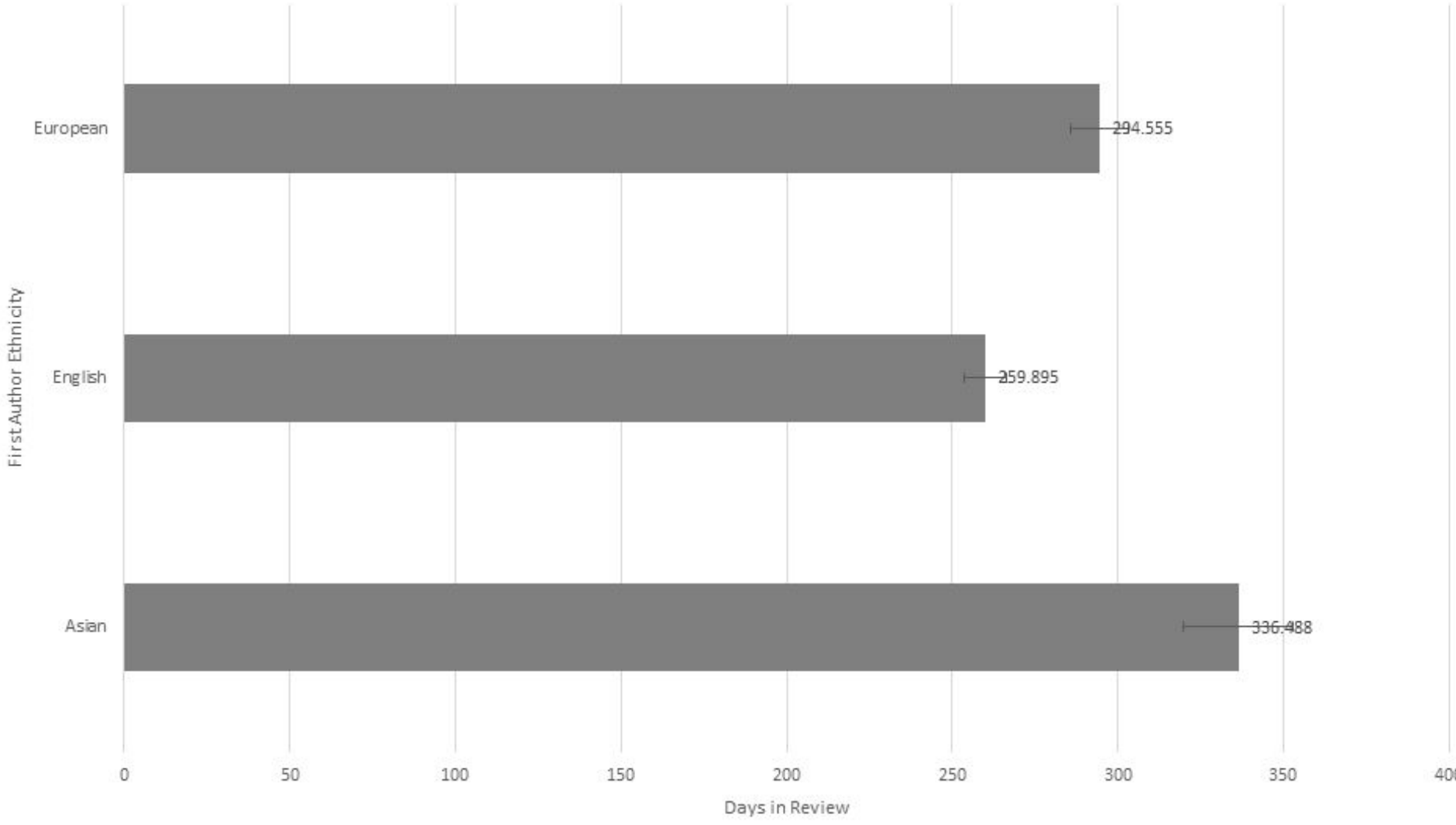


Figure 2: First Author Ethnicity by Days in Review: A total of 968 easily assumed first author ethnicities were recorded there were 86 assumed to have Asian descent, 581 English, and 301 European. The Asian authors took on average 336.488 days in review (16.527 SD), English took on average 259.895 days in review (6.358 SD), and the European first authors took on average 294.555 days in review (8.834 SD). The F Ratio was 12.0665 and the P value was <0.0001.

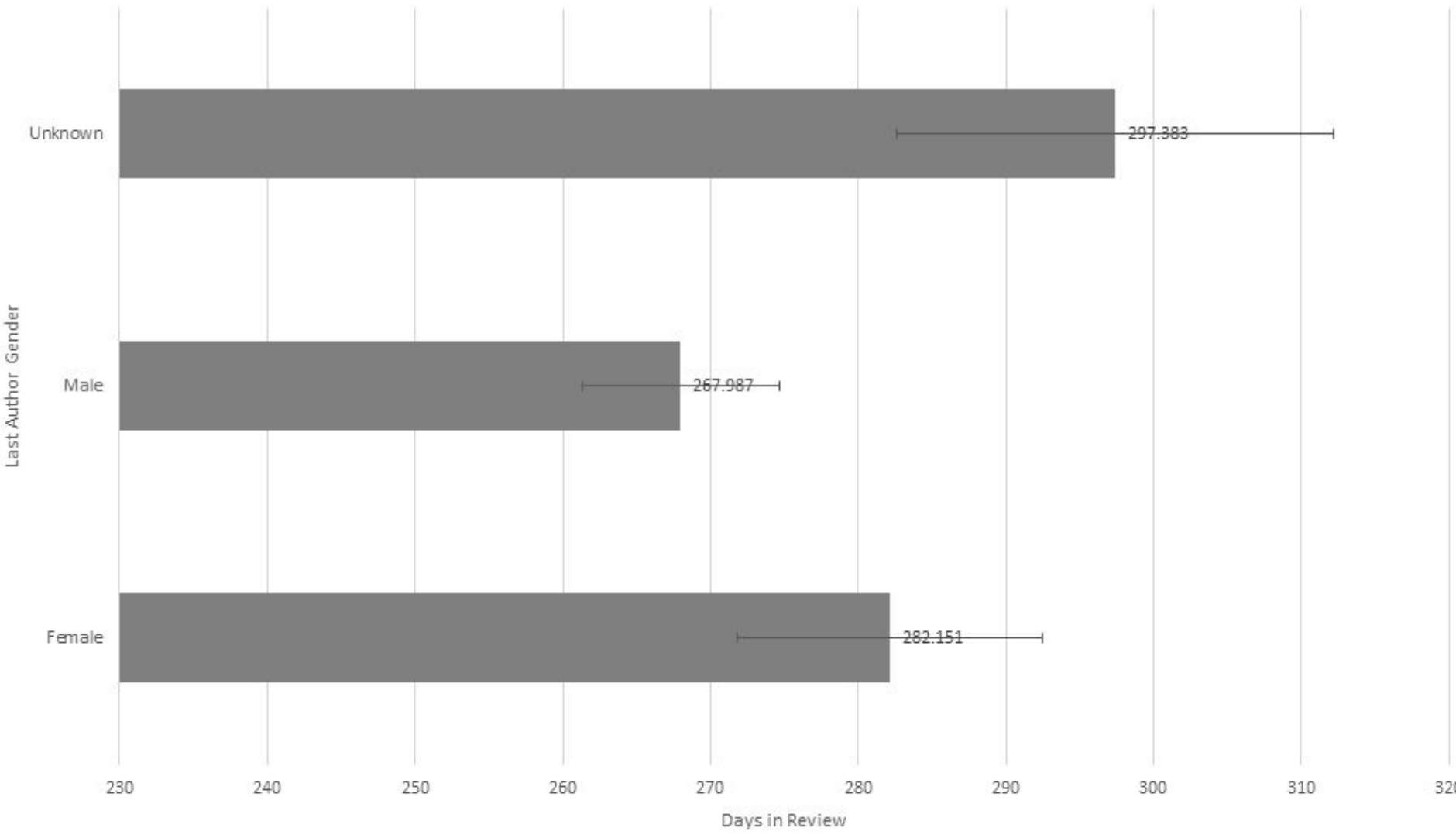


Figure 3: Last Author Gender by Days in Review: Of a total of 855 last author genders there were 219 females, 529 males, and 107 of unknown gender. The last author females took 282.151 days in review (10.320 SD), males 267.987 (6.640 SD), and unknown genders took 297.982 days in review (14.764 SD). The F ratio was 1.9454, and the P value was 0.1436.

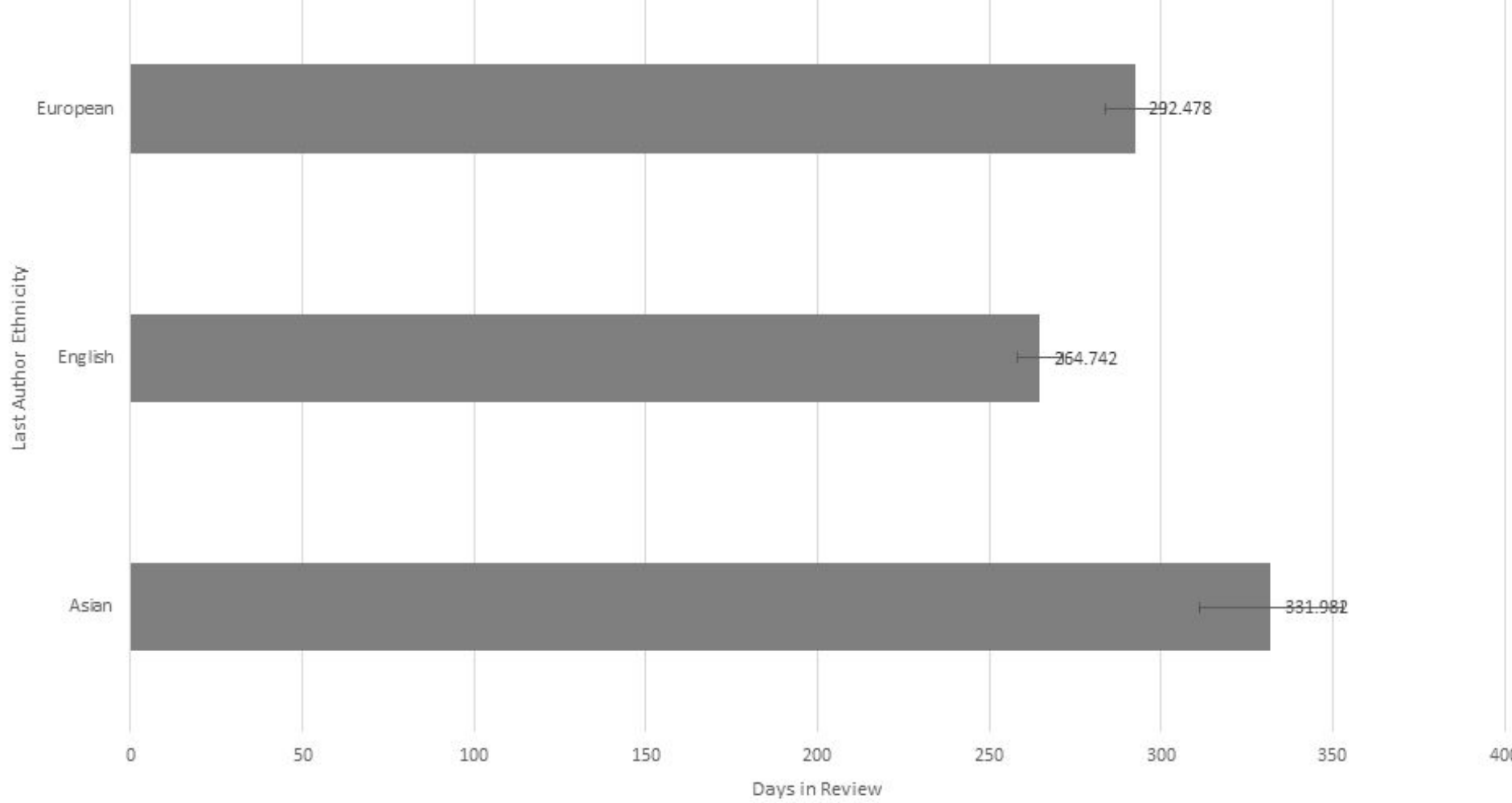


Figure 4: Last Author Ethnicity by Days in Review: There were 924 assumed last author ethnicities, 56 were of Asian descent, 546 of English, and 322 of European descent. The Asian descent took on average 331.982 days in review (20.615 SD), English descent last authors took on average 264.742 days in review (6.602 SD), European descent took 292.478 days in review (8.597 SD). The F Ratio was 6.8585 and the P value was 0.0011.